

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2004/002140

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 H01L 21/324

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

(IPC7)H01L21/324

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 Korean Patents and Application for Invention since 1975
 Korean Utility Models and Application for Utility Models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 KIPONET

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6157106 A(Applied Materials, Inc) 5 December 2000 see abstract, claims and figures 2-8	1-8,11,12,14
A	US 6222990 B1(Steag RTP Systems) 24 April 2001 see abstract and claims	1
A	US 6133152 A(Applied Materials, Inc) 17 October 2000 see abstract, claims and figures 2-6	1-8,11,12,14
A	JP P2003-289050 A(Hitachi Kokusai Electric, Inc) 10 October 2003 see abstract, claims and figure 1	1-8

Further documents are listed in the continuation of Box C.

See patent family annex.

- * Special categories of cited documents:
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

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Korean Intellectual Property Office
 920 Dunsan-dong, Seo-gu, Daejeon 302-701,
 Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

CHUNG, Hoi Hwan

Telephone No. 82-42-481-5725



经修改的权利要求

[国际局收到日：2005年5月13日 (13.05.2005);
将原始权利要求1,3,5,8,9用新的权利要求1,3,5,8,9替换(共2页)]

+声明

5 1、(修改)一种用于室内采暖的散热方法，其特征在于，通过将上下贯通的简状散热器直接连接在室内的垂直主采暖管道，使所述散热器直接从垂直主采暖管道获得热量，从而避免了旁路连接的空间占用。

2、根据权利要求1所述的散热方法，其特征在于，通过将散热器直接设置在主采暖管道的通路中或者将散热器附着在主采暖管道的管道上，从而10 将散热器直接连接在主采暖管道。

3、(修改)根据权利要求2所述的散热方法，其特征在于，通过将散热器的散热板设置成加长的竖直形，从而形成多个加长竖直的散热通道，从而而加大散热通道上下两端的空气对流压差，增大了空气流量和散热效率。

4、根据权利要求3所述的散热方法，其特征在于，通过在所述散热通道的下端设置通风装置，从而进一步增大空气流量和散热效率。

5、(修改)一种采用权利要求1所述的散热方法的散热器，连接于室内主采暖管道，其特征在于，包括：通水/通汽管道、散热板，所述通水/通汽管道与所述散热板围成一个整体，所述散热板围成的散热通道为上下贯通的加长竖直通道，所述通水/通汽管道与竖直的室内主采暖管道直接连接。

6、根据权利要求5所述的散热器，其特征在于，所述通水/通汽管道通过两端的连接管件与所述室内主采暖管道连接。

7、根据权利要求5所述的散热器，其特征在于，所述通水/通汽管道通过固定卡盘直接粘接在所述室内主采暖管道上。

8、(修改)根据权利要求5、6或7所述的散热器，其特征在于，所述15 散热板为线性挤压铝合金成型板。

9、(修改)一种采用权利要求5所述的散热器的建筑物，包括具有垂直主采暖管道的房间，其特征在于，所述散热器包括：通水/通汽管道、散热板，所述通水/通汽管道与所述散热板为一个整体，所述散热板围成的散热通道为上下贯通的加长竖直通道，所述通水/通汽管道与竖直的室内主采暖管道

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1. 国际检索报告发送的通告认为本发明 (PCT/CN2004/001307) 声明的权利要求 1 相对于引用的对比文件 1: FR2250079A 不具有新颖性, 权利要求 5 到 10 相对于引用的对比文件 1: FR2250079A, 对比文件 2: EP1067351A, 对比文件 3: CN1105746A, 对比文件 4: P11094273A 不具有创造性。

2. 根据本专利 (PCT/CN2004/001307) 的说明书和附图, 本专利申请人对权利要求书进行了如下修改:

10 (1) 将原权利要求 1 修改为:
一种用于室内采暖的散热方法, 其特征在于, 通过将上下贯通的筒状散热器直接连接在室内的垂直主采暖管道, 使所述散热器直接从垂直主采暖管道获得热量, 从而避免了旁路连接所空间占用。
即：“散热器”修改限定为“上下贯通的筒状散热器”；
将“主采暖管道”修改限定为“室内的整直主采暖管道”。

15 (2) 为了避免和修改后的权利要求 1 产生重复限定, 将原权利要求 3 进行了适应性修改。
修改后的权利要求 3: 根据权利要求 2 所述的散热方法, 其特征在于, 通过将散热器的散热板设置成加长的竖直形, 从而形成多个加长竖直的散热通道, 从而加大散热通道上下两端的空气对流压差, 增大了空气回流量和散热效率。

20 (3) 将权利要求 5 和权利要求 9 中的“垂直”修改为“竖直”，
“加长竖直通道”修改为“上下贯通的加长竖直通道”；将权利要求 9 中的“包括具有主采暖管道的房间”修改为“包括具有垂直主采暖管道的房间”

25 (4) 一种采用权利要求 1 所述的散热方法的散热器,
连接于室内主采暖管道, 其特征在于, 包括: 通水/通汽管道、散热板, 所述通水/通汽管道与所述散热板为一个整体, 所述散热板围成的散热通道为上下贯通的加长竖直通道, 所述通水/通汽管道与垂直的室内主采暖管道直接连接。

道、散热板，所述通水/通汽管道与所述散热板为一个整体，所述散热板围成的散热通道为上下贯通的加长竖直通道，所述通水/通汽管道与竖直的室内主

5 采暖管道直接连接。

(4) 将权利要求 8 中的“成型板”修改为“铝合金成型板”。

修改后的权利要求 8：根据权利要求 5、6 或 7 所述的散热器，其特征在于，所述散热板为线性挤压铝合金成型板。

3. 本专利的申请人为本专利修改后引用的参考文献的区别如下：

10 (一) 关于新颖性

修改后的权利要求 1：

对比文件 1 公开的专利是一种水平设置的单管道集中供暖系统的供暖方法，而本专利修改后的权利要求 1 是与竖直主采暖管道直接连接散热器的方式，所以不能以此来否定本专利的新颖性。何况对比文件 1 的专利内容主要 15 不是关于散热器与采暖管道的连接方式，而是散热器入口的分配装置 5 和出口装置 8，其发明目的和技术创新效果均不同。同时，散热器结构完全不 20 同。

说明：“对比文件 1 公开的专利是一种水平设置的单管道集中供暖系统得 25 供暖方法”的依据是，(1)《国际检索单位书面意见》中已指明是“一种水 平设置的”以及附图 1 所示内容；(2) 片式散热器都是整直于主采暖管道安 装的。(见《民用建筑暖通空调设计数据手册》第 59 页至 72 页中的 2-66 段 落)

(二) 关于创造性

权利要求 1，由于新增加了技术特征：“上下贯通的筒状散热器”和 “室内的竖直主采暖管道”，故没有完全被对比文件所覆盖，且从现有技术 25 的组合方案中也不可能直接得知，故具有创造性。

权利要求 2~4：

因为权利要求 2~4 是修改后的权利要求 1 的从属权利要求，所以对比文 20 件 1 否定权利要求 2~4 的理由根据上述说明已不复存在。

壁炉的改进，完全不同于现代热水/气管道连接的散热器采暖系统。至于其截面形状与本专利截面形状只是偶然外形相似，其实质是截然不同的。对比文件 2 的散热器，由于其巨大的尺寸只能用铸造铸造的方法生产，不可能用本专利所采用的现代铝合金挤压技术生产（见《铝加工技术实用手册》31 节）。何况其热水循环通过套管 6 和 61 进行的，经过同一管道对流的冷热水造成无益的热交换，降低了热效率，更何况宽大的散热片 7 由于热传导距离过大难以实现散热的作用，其实用性能以置信。至于《国际检索单位书面意见》中的“翅片 7 为加长的竖直半圆柱形，从而形成加长的竖直散热通道，这样设置的散热器增大了通道上下两端的空气压差，增大了空氣流速，提高了散热效率（见说明书第 3 页第 19 行至第 5 页第 7 行和附图 1、1）”，本专利的申请人在所述声明段落中没有见到这样的论述，而这段所述的却酷似本专利授权要求。何妨对比文件 2 的散热器上端有一个盖子 8，15 下端有一个可拆的面板 3，使得散热器翅片 7 形成的通道无法和室内空间相通，也就不可能有散热器通道内的空气与室内的空气对流。而本专利散热器散热板形成的加长竖直散热通道上下两端都是开口的，能够形成通道内的空气与室内的空气对流，才能得到“散热器增大的通道上下两端的空气压差，增大了空氣流量和散热量”的独特效果。

20 对比文件 3 公开一种利用家用燃气热水器进行采暖的方法和装置，扩展了燃气热水器的使用范围和功能。其装置的非风扇和一般的空调器一样将散热器的热量吸到采暖的房间。而本专利在散热器下端设置的通风装置只增大大部分空氣流量和散热量，只是一种辅助措施，一般情况不用，主要靠散热器自身的压差对流，和对比文件 3 的专利无关。

25 综上所述，以对比文件 1、对比文件 2 和对比文件 3 来否定本专利的权利要求 2~4 的依据是不存在的。

权利要求 5：

由于权利要求 1 具有新颖性和创造性，权利要求 5 是权利要求 1 形式上的从属，故对专利权和要求 5 的专利性的否定也不成立。

权利要求 9:

对比文件 4 公开了一种中央空调设备，其热水锅炉 80（非散热器）设在屋外，采暖设备的换气装置主体部分、暖管以及散热器部分分别独立的设在屋顶和各层楼板中。而本专利的的权利要求 9 的建筑物和采暖设备配置是针对当前普遍的多层居室采暖方式的改进，和对比文件 4 的建筑物和采暖设备配置无关，所以对比文件 4 的专利不能否定本专利的权利要求 9。

权利要求 10：

权利要求 10 是权利要求 9 的从属权利要求，由于以上论述对本专利的权利要求 9 的否定不能成立，所以对本专利的权利要求 10 的否定也就不存在了。

4. 结论

如上所述，本专利的权利要求 1 在修改后相对于对比文件 FR2250079A 具有新颖性；权利要求 1 到 10 相对于引用的对比文件 1：FR2250079A，对比文件 2：EP1067351A，对比文件 3：CN1015461，对比文件 4：JP11094273A 以及上述对比文件和公知技术的组合具有创造性。

[Invention Title]

RAPID THERMAL PROCESSING SYSTEM

[Technical Field]

5 The present invention relates to a rapid thermal processing system, and more particularly to a rapid thermal processing system, in which respective components have an enhanced structure and employ independent cooling systems, respectively.

[Background Art]

As for a representative example of heat treatment equipment for a wafer, there is a rapid thermal processing system, which is used for performing processes, such as rapid thermal annealing, rapid thermal cleaning, rapid thermal chemical vapor deposition, rapid thermal oxidation, and rapid thermal nitration. In the rapid thermal processing system, since heating and cooling of the wafer are performed in a wide range of temperatures within a very short time, there is a requirement for accurate temperature control. Additionally, since the processes in the rapid thermal processing system are rapidly carried out at a remarkably high temperature, not only a rapid and uniform heat transmission, but a rapid and uniform cooling is also very important. At this time, since results of the processes may vary according to the disposition of a heat source, the shape of a chamber, and peripheral apparatuses of the whole system, the arrangement of the heat source, the shape of the chamber, and the peripheral apparatuses must be investigated. Particularly, the shape of the chamber is an important factor in effective distribution of ultraviolet rays emitted from the heat source and maintenance of the distributed shape of the ultraviolet rays. Accordingly, as for the most important factor to maintain optimal conditions for the processes, it must be considered whether the chamber has a stable configuration in association with the heat source. With regard to this, the realistic shape of the chamber is the same as the disposition of the heat source. However, due to several peripheral apparatuses required for the processes, it is difficult

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